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Method for driving a satellite receiver

B Background of Invention

The invention is based on a method for driving a satellite receiver.

5 A television receiver, such as a video recorder, for example, is known to contain an infrared transmitting diode which enables a satellite receiver to be driven. In this case, it is disadvantageous that the user has to manually supplement programme-specific data on his video  
10 recorder, for example the programme location in the satellite receiver at which the respective programme is received. Corresponding programme information, such as show view data, can only be added manually. Such a product is known from the company Nordmende, under the  
15 name "SPECTRA V4445 SV".

It is also known for a video recorder to carry out an automatic programme search and store specific programme information, for example transmitter name, show view code or the like. At the present time, however, it  
20 is disadvantageous that such a search cannot be carried out in conjunction with an external satellite receiver.

B SUMMARY OF THE INVENTION  
The invention is based on the object of providing a simple method for driving a satellite receiver. This object is achieved by means of the features of the  
25 invention which are specified in Claim 1. Advantageous developments are specified in the subclaims.

The invention's method for driving a satellite receiver by means of a television receiver connected to the satellite receiver, is distinguished by the fact that  
30 the television receiver drives the satellite receiver in such a way that a programme search is carried out and the programme information of the respective programme which is received by the satellite receiver is assigned to the corresponding programme location in the television  
35 receiver, and that the data are stored in a memory of the television receiver.

Television receivers are to be understood to mean apparatuses which enable television reception, even if

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the signal is not displayed until later on a picture display unit e.g. of a picture tube. In other words, a video recorder, a satellite decoder and also a normal television receiver with picture tube, plasma or LCD screen are to be understood as television receivers.

This system has the advantage that the user supplies the video recorder with data of the satellite receiver in a simple manner. The programme search then enables the user to perform programming in a simple manner e.g. by means of show view. Without this solution according to the invention, the data would have to be supplemented manually or programming could not be performed. If the solution according to the invention is used in a television with picture tube, this has the advantage that the user can better utilize for example the teletext system of the television receiver.

Furthermore, the method is distinguished by the fact that the programme information is assigned to the information already present in the memory of the television receiver.

In a television receiver, it is often the case that programme information is already stored in a memory, e.g. in order to perform an automatic search. It is now possible to assign the information obtained to this information. If, by way of example, the satellite receiver contains ZDF with show view code 002 at programme 2, the information is assigned to the information in the memory. If the fact that ZDF has the show view code 002 is already present in the memory, all that is added is the information that the second memory location is used in the satellite receiver and that the user can use the same memory location in the television receiver. If the intention is to retain the programme order of the television receiver, then there is stored in the memory the information that ZDF is at programme location 2 of the satellite receiver and if the television receiver wishes to keep its programme location for ZDF, e.g. the programme location 10, the satellite

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receiver is automatically changed over in accordance with the desired programme in the event of programming or in the event of a changeover. This means that all the apparatuses could have the same programme location order.

- 5 It is also possible for the stored information and transmitter identifier to ensure that a changeover is made to the respective correct channel.

Data which are already present can be stored in a television receiver since the television receivers have  
10 been partly preprogrammed for cable and/or terrestrial reception. However, if a user uses a satellite receiver, he is generally not equipped with cable reception. Terrestrial reception is entirely possible, however. If the programme search is then started, the television  
15 receiver is advantageously assigned the same programme location as that of the satellite receiver, in order to ensure uniform location allocation. The data that were possibly stored in the memory such as e.g. show view code or transmitter name, are also assigned to the programme  
20 information in this case.

In the case of reception with a satellite receiver, the signal of the satellite receiver is normally allocated via the scart cable to the AV socket of the television receiver or fed via the RF cable, also  
25 called coax cable, to the tuner and allocated to a specific channel. The television receiver is now advantageously equipped in such a way that it performs assignments between programme location and AV or tuner channel. That means that when the user actuates the key  
30 for programme location 2 on the remote control of the television receiver, the television receiver, since it has stored the information of the order of programme locations as a result of the programme search, automatically switches the satellite receiver to  
35 programme location 2, the signal however, being communicated to it via the AV or the fixed tuner channel. In other words, the order of programme locations which the user has accepted from the satellite receiver is

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assigned to the respective keys, the signal, however, reaching the television receiver continually via the AV socket or the permanently assigned channel. In the normal case, the programme locations are assigned different channels, but in this case always the same channel or the same AV socket and switching over is carried out by means of the infrared driving of the television receiver. This driving could also be effected via a line if the two apparatuses, in addition to data transmission in one direction, also have a line for data transmission in the other direction.

It will be conceivable for signals to be modulated onto the RF or scart cable, thereby also enabling data transmission to be performed in this way. In another solution, a special control line is used for data exchange. The use of infrared signals constitutes a universal solution in which the television has an infrared transmitting diode which thus controls the search of the satellite receiver. For this purpose, a multiplicity of infrared codes of satellite receivers should be stored in the television receiver, or it should be possible to add additional codes for new types of satellite receivers whose code is not yet stored in the television receiver. The codes could be added by means of an acoustic coupling - by way of example, a service number is called which then transfers the data to an interface in the television receiver by telephone. For this purpose, the interface must be equipped with a microphone, which may also be formed by the loudspeaker in the television receiver, picks up the acoustic signals and then converts them into code information for the television receiver with the aid of the control unit. It is also possible for this service information to be transmitted via a special channel in order thus to update the television receiver with current codes.

The method is also distinguished by the fact that the programme information, such as teletext information, is updated.

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In current television receivers which display teletext information, it happens that teletext pages are not updated in the event of a programme change. This is due to the fact that, as a rule, the satellite receiver is connected to the television receiver by a cable, as described above, and transmits the respective programme to the television receiver via the cable. The television receiver does not, as a rule, note whether a programme change has taken place in the satellite receiver. This is noted only if the transmitter information is concomitantly read out as well, as a result, the method according to the invention makes it possible, in the event of detection of a transmitter change, to erase or to update the pages stored in the teletext memory.

Furthermore, the method is distinguished by the fact that the programme information, such as show view data and/or transmitter name, is stored in the memory.

The user now has the advantage that he does not have to add information such as show view data or transmitter names manually, rather these are stored automatically.

The method is also distinguished by the fact that the memory is formed from a plurality of memories or memory levels.

In the case of the memory, it is possible for it to be divided into a plurality of levels or for a plurality of memories to be used, in order to enable better data exchange or to configure the system such that it can be built up.

A circuit for driving a satellite receiver with a control unit, a data channel, a television receiver control unit and a memory, is distinguished by the fact that the television receiver control unit drives the satellite receiver control unit via the data channel and carries out a programme search, with the result that the programme information of the respective programme is stored in the memory of the television receiver for the respective corresponding programme of the television

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receiver. Furthermore, the circuit is distinguished by the fact that the data channel is formed without a cable or through cable.

*B Brief Description of the Invention*

The invention is explained below with reference to the drawings. Identical reference symbols indicate identical functioning. In the figures:

Figure 1 shows a block diagram according to the invention with a video recorder as the television receiver,

Figure 2 shows a block diagram according to the invention with a television, and

Figures 3-6 show an arrangement of equipment and various menu displays.

*3 Detailed Description*

Figure 1 shows a block diagram according to the invention with a satellite receiver SAT and a video recorder VCR as the television receiver. The satellite input signal IN passes to the control unit SE2 of the satellite receiver SAT and from there to the integrated circuit IC2. The integrated circuit is connected to transmission media, such as a radio-frequency cable HF, a scart cable SC or to an optical control transmission unit, represented by a dashed line in this case. The integrated circuit IC2 may comprise a plurality of circuits, not illustrated here, or be constructed in such a way that the corresponding information is conditioned appropriately for the form of transmission. At the remote end the video recorder VCR has a similarly configured integrated circuit IC1, which is connected to a control unit SE1. The control unit SE1 is connected to the memory SP1. The memory SP1 may be formed by a plurality of memories or be subdivided into a plurality of memory levels, not illustrated here. The control unit SE1 is driven by the remote control RC via the receiver diode ED1. The control unit SE1 exchanges information with other connected apparatuses via the integrated circuit IC1 or via the transmitting diode SD1. The control information of the transmitting diode SD1 passes to the receiving diode ED2 of the satellite receiver SAT and

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from there to the control unit SE2. The control information could also be passed to the satellite receiver SAT via a data line or a bus system, indicated by the line I in this case.

5           If, by way of example, a programme search is carried out by the method according to the invention, it is activated by means of the remote control or by means of a key on the video recorder, not illustrated here. The control unit SE1 then communicates, via the transmitting  
10 diode SD1, the control information that the satellite receiver ought to switch to its first programme location. The information of the switching over is forwarded to the control unit SE2 via the receiving diode ED2, which is present in any case in the satellite receiver. Satellite  
15 receivers are, as a rule, programmed at the time of manufacture. If this is not the case, then a search is automatically started in the satellite receiver, since the control unit SE2 notes that no information is received at the first programme location and thus starts  
20 a search.

          If it is assumed, in the normal case, ARD is received at the first programme location in the satellite receiver, the programme information is transferred from the integrated circuit IC2 via the connection types HF,  
25 SC, IR already mentioned to the integrated circuit IC1, from where the control unit SE1 of the video recorder can evaluate the programme information. The data desired in that case, such as e.g. show view, programme names or the like, are stored in the memory SP1. Afterwards, the  
30 control unit SE1, via the transmitting diode SD1, instructs the receiving diode ED2 and the control unit SE2 to change to the second programme location. As a rule, ZDF is then received and storage proceeds in the manner already explained in the ARD example. Thus, a  
35 search is then carried out for all programmes received by the satellite receiver. The user may preferably follow the search on the television screen connected to the video recorder and, if appropriate, abort it if audio

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programmes are found or if encrypted television programmes are received.

Figure 2 shows a block diagram according to the invention with a television. The method of operation is identical to the method of operation described in Figure 1. Since the television is also provided with a teletext page memory ST, it is now possible to store additional teletext information. In other words, in the event of switching over from one programme location to the next, the corresponding teletext information is renewed in the teletext page memory ST. The pages are always thus updated. If the user then calls up teletext page 333 on his television TV, this can be performed effortlessly with the remote control of the television. In current televisions, although it is possible to use the remote control of the television receiver TV to call up the teletext page, driving the satellite receiver SAT is not possible. This would only be possible if the television had a universal remote control driving the satellite receiver on the one hand, and the television on the other hand, in which case updating of the memory contents would still not thereby be provided.

Figure 3 shows a television TV connected to the video recorder VCR via the scart cable SC. The video recorder VCR is in turn connected to the satellite receiver SAT via the scart cable SC. If the user presses the Install key IL on the video recorder VCR or on the remote control of the video recorder, not illustrated here, the menu appears, displayed on the screen of the television TV. Depending on which key the user then presses, the corresponding task is performed. By way of example, if he presses key 1, the satellite programme run starts, that is to say the transmitting diode SD1 of the video recorder VCR communicates to the satellite receiver SAT, to the receiving diode ED1 thereof, that the said receiver ought to switch to its programme location 1. The driving by means of an infrared signal from the video recorder is possible in the case of models from the same

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manufacturer by virtue of the fact that the video recorder contains the infrared code necessary for driving the satellite receiver. If this is not the case, a search is carried out, since the video recorder contains  
5 infrared codes for almost all satellite receivers. If the transmitting diode SD1 forwards the command for switching over to the first programme location to the satellite receiver SAT and the video recorder VCR does not receive a signal via the scart cable SC, the said video recorder  
10 will automatically carry out the search internally, thereby finding the corresponding infrared code for the receiving diode ED2 of the satellite receiver SAT. Once this setting has been performed, the actual programme search can be begun.

15 Figure 4 shows that, by way of example, ARD has been found at programme location 1. The user can then accept and store the programme location thus chosen using key 1. He can skip this programme using key 2, store the programme under a predetermined programme location using  
20 key 3, and store the programme under a different programme location using key 4. Predetermined programme locations are specified by the manufacturer, for example, in the way that a video recorder is generally programmed. This predetermined specification might read as follows:  
25 Programme location 1 - ARD, Programme location 2 - ZDF, Programme location 3 - N3, etc. This predetermined specification is used inter alia even if the user started the antenna programme search using key 2 in the first menu from Figure 3. This predetermined specification  
30 means that subsequent sorting is no longer necessary. The user can now decide whether he would like to have freely selectable programming, partly predetermined programming or the same programming of his satellite system. These predetermined programming specifications are very  
35 helpful, depending on the components. Thus, e.g. in the case of an inexpensive satellite receiver, the programmes are in some instances optionally stored, the user thereby

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gaining a better overview of the predetermined programme locations.

If the user pressed key 4, illustrated in Figure 4, he is shown a screen like the one illustrated in Figure 5. The user is then requested to allocate a programme location number. He stores the information using key 1 and ends this operation using key 0. If all the programme locations have been assigned, whether by way of a satellite programme search or antenna programme search, the user is shown this, as illustrated in Figure 6. He can then leave this menu by actuating key 0, or the menu switches itself off automatically after a few seconds.

Figures 3, 4, 5 and 6 illustrate only by way of example a menu in which the user has to press the function keys of the remote control. It would also be conceivable for the individual commands to be contrasted with one another in colour and the user to use a cursor to steer from one menu item to another and, by way of example, to cause this menu item to be executed by means of an Enter key.

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